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Evidence from Europe*

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This paper first identifies the determinants of spouses' satisfaction levels within the household with respect to their leisure time and, secondly, characterises whether their preferences have some degree of altruistic or egoistic character as regards this particular satisfaction. To that end, it formulates a theoretical framework from the collective family model whose stochastic formulations are estimated for 14 EU countries by using the eight waves of the European Community Household Panel-ECHP (1994-2001). After showing that the IV Hausman-Taylor procedure is the chosen estimation method in the majority of countries, the general empirical results first reveal that the presence of children has a significantly negative impact on the leisure satisfaction of both spouses. Secondly, increases in individual incomes lead to lower own leisure satisfaction levels. Finally, in regard to the interrelations between spouses, both husbands and wives show egoistic behaviour with respect to the labour and non-labour incomes (wage rate) of their respective spouses' leisure satisfaction levels.

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Introduction

Quite apart from the fact that the general satisfaction of individuals has been extensively studied by psychologists (Diener *et al.*, 1999; Kahnemann *et al.*, 1999), the existing state of research also suggests that reported subjective well-being is a satisfactory empirical approximation to individual utility that can be applied in socio-economic research (Easterlin, 2002; Frey & Stutzer, 2002; Hamermesh, 2004; Oswald, 1997). In this context, the family has traditionally been considered as an element which influences the general satisfaction level of its members, with this usually taking the form of a marital status variable. In fact, the positive relationship between marriage and subjective satisfaction has been determined as clearly robust, that is to say, it is not limited to certain populations and does not disappear when a variety of other socio-economic variables, such as age or income, are controlled (Clark & Oswald, 1994, 2002; Diener *et al.*, 2000; Groot & Maassen van den Brink, 2002; Lee *et al.*, 1991).

Despite the clear relevance of the evidence adduced to support this, satisfaction has usually been studied in a way that does not reflect the fact that the family is composed of interdependent spouses, in such a way that these intuitive interrelations in reported satisfaction levels among members of the same family are missed. In other words, such an approach falls short of modelling individual satisfaction within the family as a fully interdependent process. In these circumstances, the following question arises: how does one plan the analysis of the effects of one spouse's level of satisfaction on that of the other in the framework of an integrated context?

In an attempt to provide an answer to this question, the present paper assumes a theoretical framework, namely the family collective approach, in which one spouse's satisfaction not only depends on his/her own determinants, but also on the other spouse's variables (Browning & Chiappori, 1998; Chiappori, 1988, 1992; Chiappori *et al.*, 2002). In

this way, an analysis of the individual's satisfaction within the household will allow for an examination of the interrelationships between spouses, which, in turn, makes it possible to determine whether the preferences of the family spouses have some degree of altruism or egoism.

Objective

Against this background, the paper first analyses the specific determinants of spouses' satisfaction levels within the household with respect to their leisure time, and then goes on to characterise the type of preferences of the family members according to this reported well-being. This indicator of subjective well-being has been selected after confirming that, despite the ever increasing importance that this time has for families, in both quantitative and qualitative terms, it is not habitually employed in the literature on individual satisfaction. Rather, this literature has mainly focused on studies of individual satisfaction with respect to personal income (Bonke & Browning, 2003; Clark *et al.*, 2004; D'Ambrosio & Frick, 2004; Ferrer-i-Carbonell & Van Praag, 2003; Joo & Grable, 2004) or on the job satisfaction of workers (Ahn & García, 2004; Clark & Oswald, 1996; Clark, 1999; Elliott, 2003; Groot & Maassen van den Brink, 1999; Grund & Sliwka, 2001; Linz, 2003; Roehling *et al.*, 2001; Swanberg, 2005).

Bearing these points in mind, this paper begins by offering a brief description of the family collective approach adopted in the paper, under the assumption that the family members' preferences are completely altruistic, in such a way that each spouse gives his/her partner's income or leisure equal weight to his/her own variables in the utility function.¹ This theoretical framework makes it possible to derive some stochastic formulations which are

¹ A particular case of this general situation appears when preferences are egoistic, that is to say, where individual utility simply depends on the individual's own income or leisure.

then estimated for 14 EU countries by using the panel structure which results from the eight waves of the European Community Household Panel-ECHP (1994-2001).

With respect to the estimation strategy, this takes the form of four consecutive estimations, namely pool, fixed effects, random effects and efficient generalized instrumental variables. The fixed or random effects methods correct the heterogeneity bias that appears when the use of subjective variables could imply that some people look at life either pessimistically or optimistically, even though there is “really” no difference in their level of well-being (Clark & Oswald, 2002; Ferrer-i-Carbonell & Frijters, 2004; Senik, 2004). Moreover, it is well known that individuals’ behaviour is orientated towards achieving higher satisfaction levels. As a consequence, all the variables which can be chosen by individuals will be endogenous in the satisfaction regression, in such a way that the majority of estimated parameters obtained by standard regressions are likely to be underestimated. A standard solution to this endogeneity bias, which depends on the degree that individuals can choose these actions in order to be happier, is to use instrumental variables (Powdthavee, 2004a, 2004b; Schwarze, 2004). After carrying out all these estimations, the strategy selects the one that is statistically most appropriate in every case, by using the LM value as well as two Hausman tests (Baltagi *et al.*, 2003).

The rest of the paper is organized as follows. In the following section we describe the theoretical framework. Next sections are dedicated to the data and the stochastic formulation. The following section is devoted to the empirical results and, finally, we close the paper with a summary of the most relevant conclusions.

The Theoretical Framework

The traditional or unitary approach to the analysis of the family, which assumes that this, even if it consists of different individuals, acts as a single decision-making unit, has given way in the literature to an alternative approach which considers that a household can be seen as a micro-society consisting of several individuals with their own rational preferences.² This change is due to the fact that the unitary approach suffers from a number of weaknesses, with one of the most relevant being that the assumption that subjective preferences are inseparable from individual behaviour directly leads to an alternative approach, one which explicitly takes into account the notion that a household is a group of individuals.

Family Collective Model: Optimisation

In response to this and other weaknesses, Chiappori and his co-authors (Browning & Chiappori, 1998; Chiappori, 1988, 1992; Chiappori *et al.*, 2002) propose an approach that has gradually gained more acceptance, namely the family collective model, which, based on the assumption that intra-household decisions are Pareto-efficient, considers that the household consists of two working-age individuals, $A =$ husband and $B =$ wife. According to this collective approach, the household demand functions can be derived from an intra-family decision process whose only requirement is that it must lead to Pareto-efficient distributions, with this being formally implemented in the following maximisation problem:

$$\max_{q^A, q^B, q_0^A, q_0^B} u^A \quad \text{s. to} \quad u^B \geq \bar{u}^B \quad \text{and} \quad q^A + q^B + w^A q_0^A + w^B q_0^B \leq y^A + y^B + (w^A + w^B)I \quad (1)$$

² Early attempts in the literature to account for the fact that households may consist of different individuals with their own preferences are those of Samuelson (1956) and Becker (1974a, 1974b). However, in both cases the authors ended up accepting the traditional approach: in the first case, through an aggregation utility function which is achieved by consensus among the individuals; and, in the second, by assuming the utility function of a benevolent head of the family, who takes into account the preferences of all household members.

where u^I , $I (I = A, B)$ is total utility, with \bar{u}^B being some required utility level for individual B . Moreover, w^I denote the individual wages, y^A and y^B are the non-labour incomes for individuals A and B , respectively, and, finally, T is the time endowment. After substituting the demands resulting from (1) in the initial utility function, the following indirect utility functions are obtained:

$$v^I = v^I \left[v_{q^I}^I (w^A, w^B, y^A, y^B; z), v_{q^J}^I (w^A, w^B, y^A, y^B; z), v_{q_0^I}^I (w^A, w^B, y^A, y^B; z), v_{q_0^J}^I (w^A, w^B, y^A, y^B; z) \right] \\ I, J = A, B \quad (2)$$

In this general context, we particularly focus on the optimum utility derived from own leisure time on the basis that the individual's leisure satisfaction is affected by both the own and spouse's consumption and the own and spouse's leisure:

$$v_{q_0^I}^I = v_{q_0^I}^I \left[q^{A*} (w^A, w^B, y^A, y^B; z), q^{B*} (w^A, w^B, y^A, y^B; z), q_0^{A*} (w^A, w^B, y^A, y^B; z), q_0^{B*} (w^A, w^B, y^A, y^B; z) \right] \\ I, J = A, B \quad (3)$$

where starred variables indicate equilibrium values.

Changes in Leisure Satisfaction

Bearing in mind that our objective is to determine how the change in the wage and non-wage income affects the utility derived from leisure, we can characterise how the changes in the independent variables affect the individual's utility derived from leisure time, in such a way that:³

$$\frac{dv_{q_0^I}^I}{dw^I} = \frac{\partial u^I}{\partial q^{A*}} \frac{\partial q^{A*}}{\partial w^I} + \frac{\partial u^I}{\partial q^{B*}} \frac{\partial q^{B*}}{\partial w^I} + \frac{\partial u^I}{\partial q_0^{A*}} \frac{\partial q_0^{A*}}{\partial w^I} + \frac{\partial u^I}{\partial q_0^{B*}} \frac{\partial q_0^{B*}}{\partial w^I} \quad I, J = A, B \quad (4a)$$

³ As we said earlier, our objective is to study the sign of the total effects, without considering the different components into which these can be broken down.

$$\frac{dv^I_{q_0}}{dy^I} = \frac{\partial u^I_{q_0}}{\partial q^{A*}} \frac{\partial q^{A*}}{\partial y^I} + \frac{\partial u^I_{q_0}}{\partial q^{B*}} \frac{\partial q^{B*}}{\partial y^I} + \frac{\partial u^I_{q_0}}{\partial q^{A*}} \frac{\partial q^{A*}}{\partial y^I} + \frac{\partial u^I_{q_0}}{\partial q^{B*}} \frac{\partial q^{B*}}{\partial y^I} I, J = A, B \quad (4b)$$

On the basis of these expressions, (4a) and (4b), we can determine whether the wage or the non-wage income of the spouse affects the leisure utility of the individual, with this being an indicator, albeit only a partial one, of how the spouse's variables affect the behaviour of that individual. For example, if the spouse's leisure is positively related to own leisure satisfaction, this would be an indication of altruism or, at least, a preference for shared leisure time. By contrast, if there is no relation, then this would be evidence of egoism. Obviously, these concepts, altruism and egoism, must be viewed with caution given that, in this paper, they refer to the particular utility derived from leisure time and how this is affected by changes in the exogenous variables.

The Data

Bearing in mind that the purpose of the study is to estimate the determinants of husbands' and wives' satisfaction levels with respect to their leisure time, the data used in this work comes from the eight waves of the ECHP (1994-2001) for each of the 14 sample EU countries.⁴ In this present study, families have been selected in which both spouses are aged between 16 and 65 years old, and where the husband is working. Individuals both with and without children have been included in these households. Those families lacking the required information have been excluded, resulting in a total sample ranging from 38,204 and 33,764 households in Italy and Spain, respectively, to 9,228 and 2,041 households in Germany and Luxembourg, respectively.

⁴ The ECHP is an extensive, sample-based panel survey in which the same households and individuals are interviewed annually. The data come from a standardised questionnaire and are designed to be cross-nationally comparable (Peracchi, 2002).

Dependent Variable

The ECHP includes questions about several subjective aspects of well-being, enquiring into the level of satisfaction that individuals reach with respect to different aspects, such as their income. The specific questions this paper is interested in are: “How satisfied are you with your amount of leisure time you have?”. Each of these responses takes values from 1 to 6, moving from not satisfied at all (1) to completely satisfied (6). This satisfaction question is based on individuals’ own perception, in such a way that Tables 1 and 2 begin by showing the simple means which are comparable across the populations after assuming the linearity across response.

Table 1 shows the mean and standard deviation of the dependent variables used in the analysis. The dependent variables are husband and wife satisfaction (*HusbSatisf*, *WifeSatisf*). From a comparison of the mean values, it can be appreciated that husbands declare higher satisfaction levels than wives in Belgium, Greece, Italy, Luxembourg, Portugal, Spain and the United Kingdom, with the opposite being the case in the remaining sample countries.

(Table 1)

Exogenous Variables

With respect to the exogenous variables, the study first includes a number of individual or socio-demographic characteristics and, secondly, several economic variables. As regards the former, these include the age of the spouses (*HusbAge*, *WifeAge*), the age difference between the spouses (*AgeDifference*), the education level of each of the spouses (*HusbPrimEduc*, *HusbSeconEduc*, *HusbHighEduc*, *WifePrimEduc*, *WifeSeconEduc*, *WifeHighEduc*), as well as two other variables which refer to the presence of children in the household: a dummy variable indicating if there is a child under 12 in the family (*Children<12*), and another indicating the number of children under 16 (*Children<16*).

In regard to the variables which refer to the economic situation of the household, these include the wages of both spouses (*HusbWage*, *WifeWage*), as well as the annual non-wage incomes of both the husband and the wife (*HusbNon-WageInc*, *WifeNon-WageInc*), the wife's participation in the family income (*WifeParticipation*). Finally, the study also includes a variable which indicates whether the individual is self-employed or a wage-earner (*HusbSelf-Employed*, *WifeSelf-Employed*, *HusbWage-Earner*, *WifeWage-Earner*).

Table 2 shows the mean and the standard deviation of each of the exogenous variables used in the analysis. In every sample country analysed, the age of the husband is higher than that of the wife. The age difference between both spouses is around 2.5-3 years, with the highest mean value corresponding to Greece, where this age difference reaches 5 years. With respect to the variables that refer to the presence of children in the family, note that around 27% of families have at least one child younger than 12 at home, with this percentage being somewhat lower in Germany, 20%, and higher in Austria, with 35%. However, the mean number of children under 16 does not achieve unity and is, in general, around 0.7, with the highest value appearing in Ireland, with 1.172. As regards the education level, it can be noted that wives show higher percentages than husbands for the primary education level in every country analysed, save for Finland, Ireland and Portugal, where these percentages are similar. By contrast, the percentages of husbands who have attained higher education levels are greater than that corresponding to wives in each sample EU country, save for Finland, France and Portugal.

(Table 2)

From this simple descriptive analysis it also emerges that the husband's mean income per hour is higher than that of the wife in every sample country. With respect to non-wage annual incomes, the husband's non-wage income is higher than that of the wife in every country except Denmark. In regard to the wife's participation in family income, the mean is

25%, reaching percentages of 43% and 42% in Denmark and Finland, respectively, while in Spain it is around 18%. Finally, note the higher percentage of self-employed and wage-earner husbands as compared to self-employed and wage-earner wives, respectively, in all EU sample countries, save for the case of Finland in this latter employment situation.

The Stochastic Formulation

Empirical Specification

In order to describe the empirical specification for the determinants of the individual satisfaction, it should be recalled that the panel data structure provided by the ECHP permits the application of techniques that help to control for unobservable heterogeneity. In this way, the model which underlies the observed subjective well-being responses takes the form of linear functions:

$$v_{it}^I = m_i^I + b_1^A w_{it}^A + b_2^B w_{it}^B + b_3^A y_{it}^A + b_4^B y_{it}^B + \delta z_{it} + a_i^I + e_{it}^I \quad i=1, \dots, N; t=1, \dots, T; I=A,B \quad (7)$$

where the parameters b and d are the coefficients that go with the variables; m and a are constant terms, with m being the average population and a the individual deviation with respect to this average; and, finally, e are the error terms that are supposed independent, with null mean and constant variance. These equations are estimated independently for both spouses, in such a way that N is the number of families in the sample.

Estimation Procedure

The estimation strategy is made-up of the following steps.⁵ First, each equation is estimated separately, considering the aggregated data, that is to say, a pool estimation is conducted. A panel data structure is then used in order to estimate functions, considering individual effects, both fixed and random. As is well known, the difference between the two lies in the fact that, whilst in the case of fixed effects the α coefficients are considered as fixed values for each individual, in the specification of random effects the specific aspects of each spouse are taken as independent random variables.

In line with that explained earlier in the paper, consideration is also given to an alternative estimation procedure suggested in the literature, namely the Efficient Generalized Instrumental Variables (EGIV), proposed by Hausman and Taylor (1981)⁶. This method followed in this paper uses as instruments the individual time averages of the variables (the individual's own wage, the presence of children under 12, the number of children under 16, the spouse's own wage, male and female non-labour income, the wife's participation in family income and own age) for the time invariant variables that are correlated with the individual effects (the age difference between the spouses, the individual's own education levels and the spouse's higher education level). Thus, this procedure allows for the simultaneous control of the correlation between regressors and unobserved individual effects by using instruments. Similarly, it permits the identification of the estimates of the time-invariant covariates, such as education. Moreover, it avoids the insecurity associated with the choice of suitable instruments, since the individual means over time of all the included

⁵ Given the ordinal nature of the dependent variable on individual satisfaction, an appropriate regression model would be an ordered probit. However, whilst random-effects ordered probit model is available in standard statistical software packages (Ferrer-i-Carbonell & Van Praag, 2003; Schwarze, 2004; Winkelmann, 2005), the fixed-effects ordered probit estimator is not. This is the reason why the present paper uses as approximations both random-effects and fixed-effects regression models, which are perfectly comparable by using habitual tests (D'Ambrosio & Frick, 2004; Ferrer-i-Carbonell & Frijters, 2004; Graham *et al.*, 2004).

⁶ The recent work by Baltagi *et al.* (2003) provides information on the suitability of the Hausman-Taylor procedure in a general framework where panel data are available and some regressors are correlated with the individual effects.

regressors can serve as valid instruments. Additionally, the variance-covariance structure can be taken into account so as to obtain more efficient estimators.

This EGIV method is implemented in the following steps. First, equations (7) are estimated by pooled Two Stages Least Squares (2SLS), where the set of variables mentioned above act as instruments. Secondly, the pooled 2SLS residuals are used to construct the weights for a Feasible Generalized Least Squares estimator. Thirdly, these weights are used to transform (by quasi-time demeaning) all the dependent variables, explanatory variables and instrumental variables. Finally, the transformed regression is again estimated by pooled 2SLS, where the individual means over time of the time-varying regressors and the exogenous time-invariant regressors are the instruments. Under the full set of assumptions, this Hausman and Taylor estimator coincides with the efficient GMM estimator.

After estimating the four alternative specifications, some appropriate econometric tests allow for the best formulation to be selected in every case. In particular, an LM test indicates if a panel or a pool estimation is preferred. If a panel estimation is selected, then a choice must be made from among the three alternative specifications, with two Hausman tests allowing the best panel estimation to be selected (Hausman, 1978).⁷ The first Hausman test (Hausman-1) is the standard to distinguish between the random and fixed effects estimators, whereas the second (Hausman-2) tests the Hausman-Taylor against the fixed effects model.⁸

Empirical Results

This section describes the empirical results, starting with a brief description of the test results that allows for a choice to be made of a particular estimation procedure for each sample country. It then describes the individual and economic determinants of the family

⁷ See, for details, Hausman and Taylor (1981), Wooldridge (2002) and Baltagi *et al.* (2003).

⁸ The 8.0 version of Stata includes the Hausman-Taylor procedure and is used to obtain the estimates presented in this paper

member's satisfaction and also explains their type of preferences in regard to leisure, altruistic or egoistic.

Male Leisure Satisfaction

Thus, Table 3 shows the results for male satisfaction. First, the LM tests indicate that the pool estimation is not selected in any sample country. Secondly, Hausman-1 tests reveal that the fixed effects estimation is preferred over the random effects and, thirdly, Hausman-2 tests indicate that the Hausman-Taylor estimation is preferred with respect to the fixed effects for Belgium, Denmark, France, Italy, Luxembourg, The Netherlands and the United Kingdom, with this latter estimation being selected in the rest of the sample countries.

(Table 3)

With respect to the individual or socio-demographic characteristics, Table 3 first reveals that the effect of age is significantly positive in the majority of countries. The effects of the presence of children is generally negative, with this being the case in Denmark, France, Germany, Greece, Italy, the Netherlands and Portugal if the age is less than 12 years, and in Denmark, France, Germany, Greece, Italy, the Netherlands and Portugal if it is less than 16 years. For their part, the education variables show that male satisfaction significantly decreases when husbands and wives achieved higher education qualifications, with the former result appearing in Belgium, France and the United Kingdom, and the latter appearing in Italy and The Netherlands.

Turning to the economic variables, it can be observed that increases in the husband's wage has a highly significant negative impact on male leisure satisfaction for all sample EU countries, save for Finland and Italy. Moreover, this same negative effect from the wife's wage is also observable in Denmark, Greece and Italy. That is to say, husbands from the majority of the sample countries exhibit egoistic behaviour in regard to leisure, with their

utilities remaining indifferent to changes in their wives labour incomes. With respect to non-wage incomes, the husband's variable has a positive effect on male leisure satisfaction in Denmark, Finland, France, Greece, Italy, Luxembourg, the Netherlands, Portugal and Spain. However, a non-significant effect appears from the wife's non-wage income in the majority of countries, save in Denmark, Finland, Greece and Italy where it is negative, in this way suggesting egoistic in regard to leisure behaviour. It is also observable that increases in the woman's share of family income reduces the male satisfaction in Austria, France and Spain, but raises it in Italy. Finally, the self-employment variable has a significantly negative effect in Austria, Belgium, Denmark, Finland, France, Greece, Italy, the Netherlands, Portugal and Spain.

Female Leisure Satisfaction

Table 4 show the estimations for the female leisure satisfaction. For every sample country, panel estimation is preferred to the pool one and the fixed effects estimation is selected over the random effects. Moreover, for all countries, save for France, Germany and Portugal, that Hausman-Taylor estimation is preferred to fixed effects.

(Table 4)

First note that female leisure satisfaction increases with age in Austria, Belgium, Denmark, Greece, Portugal and Spain, whilst it decreases in Finland, France and Italy. For their part, age difference negatively affects the wife's satisfaction in Belgium, Finland, Greece and Italy, and positively affects it in the United Kingdom. As before, the presence of a child aged less than 12 years has a negative effect in the majority of sample countries, namely Belgium, Denmark, Germany, Greece, Italy, Luxembourg, Portugal and Spain. As the number of children under 16 years of age increases, so leisure satisfaction decreases in all the sample countries, save for Luxembourg. Furthermore, for the majority of countries, female

satisfaction increases significantly when the husband has achieved higher levels of education and decreases significantly when it is the wife who has attained higher qualifications.

As regards the economic variables, it can be observed for all sample countries that, according to the egoistic behaviour in wage incomes, a higher husband's wage does not significantly affect female satisfaction, whilst there is a significantly negative effect appearing for the wife's wage in Austria, Belgium, Denmark, France, Germany, Greece, Luxembourg, the Netherlands, Portugal, Spain and the United Kingdom. The wife's non-wage income increases her own satisfaction in Italy and Spain, while it reduces it in Denmark and Germany, whilst the husband's non-labour income does not significantly affect it, according to the egoistic behaviour, in the majority of sample countries. The higher the wife's share in family income, the lower the female leisure satisfaction in Finland and Italy, and the higher in Austria, Greece, Portugal and Spain. Finally, self-employment negatively affects female satisfaction in most of the sample countries, save for Germany and the United Kingdom, where it is indifferent, and Luxembourg, where it is positive.

Conclusions

This paper has analysed the determinants of household members' satisfaction with respect to their leisure time in a collective family model framework using a sample of 14 EU countries. On the basis of this framework, it has also been possible to study the interrelations that exist between spouses in order to determine the kind of preferences that characterize household members in each of the sample countries. By using country data from the eight waves of the ECHP (1994-2001), four alternative specifications (pool, fixed effects, random

effects and efficient generalized instrumental variables) have been estimated and the most appropriate selected in every case by using an LM value and two Hausman tests.

With respect to the selected formulation, the empirical results show that the IV Hausman-Taylor estimator has been chosen in the majority of cases. As regards the determinants, age has a significantly positive impact on the leisure satisfaction of both spouses in Austria, Belgium, Denmark, Finland, Greece, Portugal and Spain. By contrast, the presence of children is generally negative, with this being the case for both of the spouses in Denmark, Germany, Greece, Italy and Portugal, when the age is less than 12 years and when it is less than 16. Male satisfaction significantly decreases when husbands and wives achieve higher education qualifications. For its part, female satisfaction significantly increases when the husband has achieved higher levels of education and significantly decreases when it is the wife who has attained such qualifications. With respect to the economic variables, it appears that increases in individual incomes lead to lower own leisure satisfaction levels. Finally, as regards the interrelations between spouses, it emerges that, in the majority of sample countries, both husbands and wives show egoistic behaviour with respect to the labour and non-labour incomes of their respective spouses, that is to say, satisfaction with respect to own leisure time does not change as a result of changes to the spouse's incomes.

The fact that the conclusions with respect to individual and economic characteristics allow us to include, within one and the same group, a number of countries that are distinctive from a geographical perspective, that is to say, the inclusion of both Nordic and Mediterranean countries, indicates that the effects of the above-mentioned characteristics constitute general results which do not depend, overall, on the specific geographical location of the countries.

An understanding of individual satisfaction derived from leisure time within the family could be particularly useful for policy-makers in evaluating socio-economic policies directed

towards the availability of free time. Thus, the empirical conclusions drawn from this study will hopefully assist in the drafting of such policies that have the final object of increasing the satisfaction levels shown by the spouses within the household.

The finding that children continue to suppose some degree of sacrifice for their parents in terms of their working lives, particularly in the case of wives, and this despite the different levels of public assistance given to them in an attempt to solve the problem of reconciling work and family life, suggests that a number of appropriate social policies remain to be formulated. Above all, it appears necessary to give further support to resolving the conflict between raising children and developing a professional career that is not adversely affected by the decision to raise a family. To that end, legislation to combat sex discrimination or attitudes that discriminate against individuals who have the responsibility of bringing up young children should be strengthened. Similarly, measures should be taken to promote flexibility in the working day.

As regards the economic variables, and in addition to the policies focused on increasing the income level of individuals, the conclusion that both husbands and wives show egoistic behaviour with respect to the labour and non-labour incomes of their respective spouses reveals, among other things, that they both assume that their spouse's incomes are obtained as a result of a higher number of hours worked. This probably has the effect of decreasing the time dedicated to the leisure time that these spouses enjoy. In such circumstances, policies directed particularly towards favouring the availability of free time could have a significant impact on total family satisfaction.

Modeling interrelations within a family on the basis of satisfaction responses constitutes a promising new area of socio-economic research that will probably increase in importance in the near future, given the remaining aspects that are pending analysis. Thus, the consideration of children within the family implies some changes to the framework of

interdependences derived from the consideration of spouses alone, with this aspect already being reflected, at least to some degree, in the literature (Altonji *et al.*, 1992; Becker, 1991; Schwarze, 2004; Schwarze & Winkelmann, 2005; Winkelmann, 2005). However, this line of work has yet to be extended to the effects of collusion between children and spouses, where this places one spouse in a non-cooperative position with respect to the other. In this same line, the modeling of ordinal satisfaction responses in habitual data bases (British Household Panel Survey, European Community Household Panel, German Socio-Economic Panel, Panel Study of Income Dynamics) advise the use of ordered discrete models (D'Ambrosio & Frick, 2004; Fernández-Val, 2005; Ferrer-i-Carbonell & Van Praag, 2003; Schwarze, 2004; Schwarze & Winkelmann, 2005; Winkelmann, 2005) or threshold and sequential models (Boes & Winkelmann, 2004), which make use of the advantages offered by the panel structure.

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TABLE 1
Descriptive Analysis of the Endogenous Variables (Mean and Std. Dev.)

Variables	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	The Netherlands	Portugal	Spain	United Kingdom
HusbSatisf	4.689 (1.38)	4.202 (1.44)	4.586 (1.34)	4.306 (1.40)	4.193 (1.27)	4.171 (1.42)	3.754 (1.36)	4.473 (1.43)	3.767 (1.42)	4.557 (1.37)	4.374 (1.28)	3.903 (1.00)	3.893 (1.55)	4.380 (1.47)
WifeSatisf	4.695 (1.38)	4.187 (1.47)	5.762 (1.29)	4.361 (1.37)	4.209 (1.24)	4.244 (1.36)	3.673 (1.32)	4.532 (1.44)	3.592 (1.39)	4.491 (1.41)	4.454 (1.23)	3.898 (0.99)	3.751 (1.48)	4.431 (1.44)
Number of observations	14,392	14,129	12,083	11,840	31,083	9,228	27,817	11,378	38,204	2,041	24,446	28,803	33,764	14,612

TABLE 2
Descriptive Analysis of the Exogenous Variables (Mean and Std. Dev.)

Variables	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	The Netherlands	Portugal	Spain	United Kingdom
HusbAge	50.374 (14.94)	48.357 (14.84)	47.247 (15.35)	47.529 (14.23)	48.696 (15.32)	49.299 (13.57)	53.203 (14.84)	50.706 (14.55)	51.235 (14.38)	47.081 (14.11)	48.232 (14.41)	51.432 (15.84)	51.129 (15.43)	48.335 (15.44)
WifeAge	47.339 (14.68)	45.944 (14.70)	44.607 (14.88)	45.364 (13.87)	46.191 (15.09)	46.757 (13.73)	48.221 (14.98)	47.958 (13.82)	47.599 (14.00)	43.932 (13.65)	45.734 (14.33)	48.409 (15.59)	48.380 (15.22)	45.920 (15.16)
AgeDifference	3.008 (4.53)	2.415 (4.23)	2.641 (4.35)	2.157 (4.12)	2.509 (4.51)	2.549 (4.09)	5.015 (4.62)	2.752 (4.18)	3.641 (4.01)	3.177 (4.54)	2.492 (3.88)	3.010 (4.74)	2.765 (3.79)	2.423 (4.85)
HusbPrimEduc	0.211 (0.41)	0.308 (0.46)	0.238 (0.43)	0.303 (0.50)	0.382 (0.49)	0.197 (0.40)	0.599 (0.49)	0.530 (0.50)	0.577 (0.49)	0.498 (0.50)	0.241 (0.43)	0.880 (0.32)	0.703 (0.46)	0.433 (0.50)
HusbSeconEduc	0.711 (0.45)	0.308 (0.46)	0.413 (0.49)	0.410 (0.49)	0.379 (0.49)	0.476 (0.50)	0.215 (0.41)	0.305 (0.46)	0.282 (0.45)	0.295 (0.46)	0.524 (0.50)	0.068 (0.25)	0.133 (0.34)	0.214 (0.41)
HusbHighEduc	0.070 (0.26)	0.316 (0.46)	0.344 (0.47)	0.281 (0.45)	0.191 (0.39)	0.327 (0.47)	0.184 (0.39)	0.155 (0.36)	0.078 (0.27)	0.205 (0.40)	0.216 (0.41)	0.042 (0.20)	0.164 (0.37)	0.339 (0.47)
WifePrimEduc	0.385 (0.49)	0.344 (0.48)	0.298 (0.46)	0.282 (0.45)	0.436 (0.50)	0.370 (0.48)	0.678 (0.47)	0.499 (0.50)	0.581 (0.49)	0.646 (0.48)	0.341 (0.47)	0.867 (0.34)	0.749 (0.43)	0.517 (0.50)
WifeSeconEduc	0.545 (0.50)	0.281 (0.45)	0.366 (0.48)	0.363 (0.48)	0.321 (0.47)	0.508 (0.50)	0.179 (0.38)	0.371 (0.48)	0.280 (0.45)	0.247 (0.43)	0.494 (0.50)	0.066 (0.25)	0.121 (0.33)	0.215 (0.41)
WifeHighEduc	0.060 (0.24)	0.310 (0.46)	0.330 (0.47)	0.351 (0.48)	0.191 (0.39)	0.117 (0.32)	0.142 (0.35)	0.122 (0.33)	0.059 (0.24)	0.103 (0.30)	0.149 (0.36)	0.042 (0.20)	0.129 (0.34)	0.257 (0.44)
Children < 12	0.352 (0.48)	0.271 (0.44)	0.296 (0.46)	0.339 (0.47)	0.302 (0.46)	0.199 (0.40)	0.272 (0.45)	0.322 (0.47)	0.285 (0.45)	0.271 (0.44)	0.286 (0.45)	0.281 (0.45)	0.279 (0.45)	0.259 (0.44)
Children < 16	0.746 (1.02)	0.843 (1.10)	0.756 (1.03)	0.846 (1.15)	0.785 (1.06)	0.667 (0.98)	0.719 (0.95)	1.172 (1.37)	0.650 (0.88)	0.930 (1.10)	0.781 (1.07)	0.703 (0.99)	0.692 (0.93)	0.753 (1.06)
HusbWage	5.971 (7.79)	6.789 (11.75)	8.336 (7.85)	9.001 (9.90)	6.278 (9.51)	7.432 (8.19)	2.825 (4.33)	6.926 (21.48)	0.002 (0.00)	10.317 (10.22)	7.595 (9.65)	2.338 (3.19)	3.706 (4.80)	5.242 (6.82)
WifeWage	2.887 (4.98)	4.105 (5.25)	6.170 (21.07)	6.392 (9.32)	3.627 (6.60)	3.323 (5.78)	0.968 (2.40)	2.582 (5.72)	3.457 (5.70)	4.461 (7.71)	4.248 (7.67)	1.277 (2.42)	1.321 (3.15)	3.411 (6.69)
HusbNon-WageInc	6,149.507 (8,337.33)	5,985.885 (16,297.34)	3,857.816 (7,496.34)	5,738.627 (15,030.21)	6,366.984 (9,288.09)	4,944.830 (8,586.40)	2,088.185 (3,929.44)	2,605.644 (5,643.54)	1.316 (2.97)	8,662.132 (11,965.47)	5,088.895 (8,346.27)	1,725.190 (3,750.84)	3,129.26 (5,673.17)	2,968.784 (5,544.07)
WifeNon-WageInc	2,941.705 (5,359.75)	3,620.359 (5,923.35)	4,659.143 (5,150.34)	525.783 (7,218.24)	2,484.861 (4,422.37)	2,331.978 (3,594.95)	728.712 (1,820.82)	1,091.070 (2,197.50)	0.065 (0.02)	2,195.136 (4,846.14)	1,611.280 (3,298.23)	715.548 (1,837.47)	683.10 (1,817.97)	1,714.733 (2,519.39)
WifeParticipation	0.262 (0.23)	0.318 (0.22)	0.430 (0.15)	0.423 (0.16)	0.301 (0.21)	0.268 (0.21)	0.207 (0.24)	0.219 (0.23)	0.235 (0.25)	0.208 (0.22)	0.243 (0.21)	0.284 (0.25)	0.179 (0.24)	0.327 (0.20)
HusbSelf-Employed	0.105 (0.31)	0.112 (0.32)	0.077 (0.27)	0.176 (0.38)	0.089 (0.28)	0.067 (0.25)	0.323 (0.47)	0.237 (0.42)	0.188 (0.39)	0.086 (0.28)	0.060 (0.24)	0.239 (0.43)	0.155 (0.36)	0.125 (0.33)
WifeSelf-Employed	0.083 (0.28)	0.055 (0.23)	0.033 (0.18)	0.101 (0.30)	0.034 (0.18)	0.028 (0.17)	0.085 (0.28)	0.028 (0.16)	0.055 (0.23)	0.037 (0.19)	0.031 (0.17)	0.120 (0.33)	0.054 (0.23)	0.045 (0.21)
HusbWage-Earner	0.529 (0.50)	0.586 (0.49)	0.692 (0.46)	0.530 (0.50)	0.567 (0.50)	0.625 (0.48)	0.318 (0.47)	0.465 (0.50)	0.454 (0.50)	0.631 (0.48)	0.673 (0.47)	0.473 (0.50)	0.460 (0.50)	0.577 (0.49)
WifeWage-Earner	0.384 (0.49)	0.467 (0.50)	0.645 (0.48)	0.550 (0.50)	0.437 (0.50)	0.477 (0.50)	0.176 (0.38)	0.334 (0.47)	0.272 (0.45)	0.379 (0.49)	0.500 (0.50)	0.357 (0.48)	0.225 (0.42)	0.536 (0.50)
Number of observations	14,392	14,129	12,083	11,840	31,083	9,228	27,817	11,378	38,204	2,041	24,446	28,803	33,764	14,612

TABLE 3
Male Satisfaction

Variables	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	The Netherlands	Portugal	Spain	United Kingdom
Constant	3.926** (33.92)	6.655** (6.60)	5.045** (7.96)	2.573** (7.69)	4.668** (18.67)	4.797** (12.22)	3.688** (44.36)	3.562** (14.99)	2.972** (9.65)	4.667** (7.73)	4.304** (15.39)	3.791** (68.61)	3.108** (34.08)	7.200** (13.93)
HusbAge	0.024** (12.88)	0.007** (2.37)	0.018** (7.13)	0.008 (1.31)	0.007** (3.99)	-0.007 (-0.90)	0.011** (7.86)	0.022** (4.94)	-0.013** (-3.57)	0.014** (2.07)	0.004 (1.55)	0.006** (6.47)	0.024** (14.99)	-0.006* (-1.70)
AgeDifference		0.007 (0.45)	-0.006 (-0.64)		-0.004 (-0.57)				-0.005 (-0.53)	0.002 (0.08)	0.007 (0.37)			-0.016 (-1.26)
Children < 12	-0.023 (-0.54)	-0.017 (-0.67)	-0.054* (-1.66)	-0.008 (-0.12)	-0.040** (-1.96)	-0.078* (-1.86)	-0.136** (-5.16)	-0.014 (-0.36)	-0.106** (-2.72)	-0.004 (-0.05)	-0.077** (-3.40)	-0.050** (-2.79)	0.000 (0.01)	-0.055 (-1.53)
Children < 16	-0.040 (-1.51)	-0.063** (-2.82)	-0.034 (-1.53)	-0.143** (-3.80)	-0.055** (-3.84)	-0.134** (-2.31)	0.044** (2.52)	-0.077** (-3.15)	-0.031 (-1.00)	0.074 (0.83)	-0.031** (-2.07)	0.002 (0.16)	-0.058** (-3.14)	-0.160** (-4.41)
HusbSeconEduc		-6.287** (-2.26)	-1.412 (-1.29)		-2.097** (-2.59)				1.024* (1.71)	-1.719 (-1.14)	0.533 (1.02)			-8.834** (-5.93)
HusbHighEduc		-1.053 (-0.90)	-0.662 (-0.75)		-0.192 (-0.38)				2.038* (1.90)	-0.053 (-0.03)	0.952 (0.97)			-0.357 (-0.53)
WifeHighEduc		-0.387 (-0.51)	-0.350 (-0.53)		0.792 (1.38)				-2.034* (-1.74)	-1.637 (-0.94)	-2.225** (-2.20)			-0.726 (-1.22)
HusbWage	-0.100** (-11.54)	-0.085** (-11.86)	-0.076** (-8.17)	0.227** (4.67)	-0.047** (-10.09)	-0.078** (-3.52)	-0.082** (-18.77)	-0.089** (-3.88)	0.305** (5.27)	-0.043* (-1.72)	-0.096** (-9.92)	-0.040** (-12.63)	-0.087** (-20.17)	-0.130** (-5.81)
WifeWage	0.013 (1.55)	0.001 (0.08)	-0.014* (-1.70)	0.008 (0.23)	0.002 (0.40)	-0.013 (-0.62)	-0.018** (-3.45)	-0.006 (-0.20)	-0.201** (-3.74)	-0.022 (-1.04)	-0.009 (-0.98)	0.001 (0.33)	0.006 (1.01)	0.067** (3.10)
HusbNon-WageInc	0.111 (0.75)	-0.011 (-0.52)	1.399** (4.89)	1.593** (4.04)	1.047** (5.38)	-2.761** (-1.99)	0.022** (2.44)	-2.252 (-0.58)	6.059** (3.01)	0.237** (2.44)	2.362** (3.89)	0.023** (2.17)	0.045** (3.83)	1.668 (0.43)
WifeNon-WageInc	0.097 (0.51)	0.063 (1.35)	-0.738** (-2.00)	-1.044* (-1.68)	0.408 (1.20)	-4.821 (-1.55)	-0.032* (-1.75)	6.143 (0.56)	-6.291* (-1.71)	-0.165 (-0.91)	-1.284 (-0.89)	0.003 (0.12)	-0.013 (-0.33)	8.449 (1.31)
WifeParticipation	-0.227** (-2.72)	-0.126 (-1.53)	-0.079 (-0.75)	0.453 (1.52)	-0.110** (-1.99)	0.165 (1.19)	0.040 (0.68)	0.047 (0.37)	1.108** (4.15)	0.226 (0.76)	0.050 (0.80)	-0.060 (-1.52)	-0.204** (-3.15)	-0.099 (-0.89)
HusbSelf-Employed	-0.682** (-11.74)	-0.291** (-4.29)	-0.417** (-7.18)	-0.189** (-2.13)	-0.611** (-13.92)	-0.176 (-1.28)	-0.395** (-12.65)	-0.074 (-1.11)	-0.253** (-3.74)	-0.263 (-1.38)	-0.298** (-6.56)	-0.051** (-2.55)	-0.489** (-12.46)	-0.035 (-0.58)
LM	5805.94 0.0000	7546.08 0.0000	4845.16 0.0000	1975.21 0.0000	12550.27 0.0000	1283.07 0.0000	2770.73 0.0000	2980.80 0.0000	2924.81 0.0000	267.24 0.0000	10877.65 0.0000	13603.89 0.0000	4535.39 0.0000	2671.19 0.0000
Hausman 1	105.90 0.0000	67.63 0.0000	44.15 0.0000	54.54 0.0000	72.42 0.0000	118.55 0.0000	264.42 0.0000	53.79 0.0000	59.04 0.0000	32.62 0.0002	121.65 0.0000	177.76 0.0000	135.22 0.0000	134.14 0.0000
Hausman 2	40.01 0.0000	3.56 0.9378	6.31 0.7080	36.89 0.0000	9.64 0.3805	18.08 0.0343	27.33 0.0012	23.70 0.0048	9.79 0.3680	8.57 0.4775	3.16 0.9578	48.43 0.0000	27.69 0.0011	3.49 0.9414
Selected estimation	FE	HT	HT	FE	HT	FE	FE	FE	HT	HT	HT	FE	FE	HT
Number of observations	14392	14129	12083	6236	31083	9228	27817	11378	9376	2041	24446	29097	34027	14612

Note: t ratio in brackets. *: indicates individual significance at the 10% level. **: indicates individual significance at the 5% level. ***: indicates individual significance at the 1% level.

TABLE 4
Female Satisfaction

Variables	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	The Netherlands	Portugal	Spain	United Kingdom
Constant	4.101** (19.19)	4.334** (9.67)	5.680** (18.40)	6.579** (10.69)	4.667** (41.83)	4.960** (13.44)	3.248** (31.30)	5.315** (13.00)	4.853** (14.97)	4.180** (5.31)	4.755** (30.76)	3.907** (74.30)	2.949** (25.36)	4.861** (14.41)
WifeAge	0.018** (9.54)	0.010** (3.11)	0.005* (1.68)	-0.013** (-2.26)	-0.005** (-2.05)	-0.011 (-1.43)	0.012** (8.89)	0.004 (0.94)	-0.020** (-4.20)	0.012 (1.31)	0.001 (0.64)	0.002** (1.96)	0.017** (10.45)	0.005 (1.23)
AgeDifference	-0.010 (-1.59)	-0.012* (-1.67)	-0.001 (-0.18)	-0.025** (-2.36)			-0.009* (-1.71)	0.008 (0.72)	-0.024** (-2.32)	0.001 (0.06)	-0.011 (-1.13)		0.004 (0.65)	0.014** (2.36)
Children < 12	0.013 (0.30)	-0.073** (-2.66)	-0.146** (-4.18)	0.070 (1.09)	-0.031 (-1.38)	-0.168** (-3.95)	-0.282** (-10.21)	0.011 (0.31)	-0.164** (-4.12)	-0.296** (-4.14)	0.030 (1.29)	-0.110** (-6.19)	-0.148** (-5.74)	-0.045 (-1.19)
Children < 16	-0.110** (-4.05)	-0.131** (-5.56)	-0.114** (-4.76)	-0.175** (-4.75)	-0.149** (-9.68)	-0.223** (-3.75)	-0.107** (-5.89)	-0.136** (-5.74)	-0.150** (-4.85)	-0.013 (-0.14)	-0.175** (-11.01)	-0.023* (-1.82)	-0.198** (-10.85)	-0.285** (-7.73)
HusbHighEduc	2.982** (3.98)	1.122** (2.39)	1.272** (3.48)	-0.270 (-0.46)			1.498** (2.40)	3.192** (3.94)	2.129** (2.27)	0.715 (0.52)	1.081** (2.06)		0.917** (2.11)	2.155** (6.35)
WifeSeconEduc	-0.595 (-1.55)	-0.384 (-0.32)	-1.555** (-3.16)	-2.447** (-3.30)			1.035** (2.11)	-3.093** (-3.49)	-0.429 (-0.97)	0.079 (0.03)	0.242 (0.70)		1.879** (2.33)	-2.777** (-3.21)
WifeHighEduc	-0.130 (-0.12)	-1.659** (-4.79)	-1.496** (-3.64)	-1.655** (-2.68)			-1.809** (-3.33)	-1.573** (-2.42)	-0.642 (-0.47)	-2.642** (-2.39)	-3.290** (-6.24)		-1.445** (-4.10)	-1.947** (-5.52)
HusbWage	0.007 (0.81)	-0.009 (-1.17)	-0.010 (-1.00)	-0.077 (-1.60)	0.004 (0.74)	0.013 (0.57)	-0.012** (-3.01)	0.018 (0.83)	-0.151** (-2.67)	0.016 (0.60)	0.003 (0.31)	0.004 (1.41)	0.007* (1.65)	-0.031 (-1.37)
WifeWage	-0.029** (-3.38)	-0.062** (-8.29)	-0.108** (-12.00)	0.222** (6.16)	-0.065** (-11.27)	-0.056** (-2.65)	-0.077** (-13.50)	0.008 (0.28)	0.093* (1.72)	-0.065** (-2.77)	-0.056** (-5.91)	-0.042** (-11.80)	-0.067** (-11.97)	-0.099** (-4.38)
HusbNon-WageInc	0.234 (1.54)	0.008 (0.39)	0.296 (0.98)	-0.062 (-0.19)	0.031 (0.15)	-0.062 (-0.04)	-0.014 (-1.50)	1.672 (0.45)	-4.893** (-2.44)	0.099 (1.01)	0.574 (0.90)	0.008 (0.79)	0.025** (2.17)	2.278 (0.62)
WifeNon-WageInc	0.063 (0.33)	0.069 (1.40)	-1.316** (-3.34)	0.736 (1.32)	0.304 (0.82)	-7.299** (-2.30)	0.015 (0.81)	-3.451 (-0.34)	6.485* (1.77)	-0.316 (-1.62)	2.298 (1.52)	-0.005 (-0.21)	0.070* (1.84)	8.650 (1.36)
WifeParticipation	0.178** (2.08)	0.016 (0.19)	-0.061 (-0.54)	-1.163** (-3.97)	-0.038 (-0.63)	0.147 (1.04)	0.278** (4.54)	-0.184 (-1.49)	-0.484* (-1.82)	0.278 (0.87)	-0.020 (-0.31)	0.129** (3.32)	0.172** (2.65)	0.091 (0.78)
WifeSelf-Employed	-0.810** (-15.13)	-0.234** (-3.05)	-0.159** (-2.09)	-0.539** (-6.01)	-0.364** (-5.47)	0.041 (0.27)	-0.279** (-6.99)	-0.268** (-2.33)	-0.392** (-5.18)	0.466** (2.26)	-0.130** (-2.50)	-0.054** (-2.43)	-0.555** (-12.14)	-0.074 (-0.98)
LM	5971.88 0.0000	7346.04 0.0000	3679.28 0.0000	1884.46 0.0000	12779.95 0.0000	1091.11 0.0000	2884.07 0.0000	2991.52 0.0000	2631.52 0.0000	356.91 0.0000	10351.89 0.0000	14665.37 0.0000	3925.47 0.0000	2460.63 0.0000
Hausman 1	110.45 0.0000	72.58 0.0000	54.60 0.0000	34.49 0.0001	137.69 0.0000	90.14 0.0000	83.57 0.0000	44.14 0.0000	71.39 0.0000	30.45 0.0004	140.48 0.0000	183.07 0.0000	119.13 0.0000	81.99 0.0000
Hausman 2	15.06 0.0893	10.29 0.3274	2.05 0.9906	8.41 0.4932	17.32 0.0440	20.98 0.0128	9.62 0.3819	0.85 0.9997	7.34 0.6022	6.14 0.7258	7.62 0.5727	31.79 0.0002	7.66 0.5683	5.03 0.8318
Selected estimation	HT	HT	HT	HT	FE	FE	HT	HT	HT	HT	HT	FE	HT	HT
Number of observations	14392	14129	12083	6236	31083	9228	27817	11378	9376	2041	24446	29097	34027	14612

Note: t ratio in brackets. *: indicates individual significance at the 10% level. **: indicates individual significance at the 5% level. ***: indicates individual significance at the 1% level.

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